

WHAT IS CLAIMED IS:

1. A storage device comprising:
a tape drive;
a spindle in the tape drive; and
a probe positioned in the spindle, wherein the probe engages an opening in the center of a hub in a cartridge as the cartridge is inserted in the tape drive.
2. A storage device according to Claim 1 wherein the spindle includes:
a hollow stem;
a spring in the hollow stem; and
a stop portion positioned in one end of the hollow stem, wherein one end of the spring is coupled to the stop portion to provide a platform for compressing the spring.
3. A storage device according to Claim 2 wherein the probe is coupled to the other end of the spring.
4. A storage device according to Claim 3 wherein the probe includes a tip, and one end of the tip is chamfered to engage the opening in the center of the cartridge hub.
5. A storage device according to Claim 4 wherein the probe further includes a base portion coupled to another end of the tip, the width of the base portion being larger than the width of the tip.
6. A storage device according to Claim 5 further comprising:
another stop portion at another end of the hollow stem, wherein the stop portion includes an opening that is dimensioned to allow the tip portion of the probe to protrude through the opening, while retaining the base portion of the probe within the hollow stem.

7. A storage device according to Claim 4 wherein the spring is oriented to compress to retract the probe when a cartridge without an opening in the center of the cartridge hub is inserted in the tape drive.

8. A storage device according to Claim 4 wherein the spring is oriented to extend the tip of the probe through the opening in the center of the cartridge hub when the cartridge is inserted in the tape drive.

9. A storage device according to Claim 8 wherein the tip of the probe and the chamfer at the end of the tip are dimensioned to engage the opening in the cartridge hub to align the cartridge hub with the tape drive hub.

10. A storage device according to Claim 1 further comprising:
an access device, wherein the access device is automatically controllable to insert the cartridge in the tape drive.

11. A method for aligning a cartridge hub in a tape drive, wherein the cartridge includes an opening for receiving an alignment probe, the method comprising:
mounting the alignment probe in the tape drive so that the alignment probe engages the opening in the cartridge to align the cartridge hub with a desired position as the cartridge is inserted in the tape drive.

12. A method according to Claim 11 wherein the alignment probe is spring-loaded, and the tape drive can accept cartridges with and without the opening.

13. A method according to Claim 11 wherein the opening is positioned in the cartridge hub.

14. A method according to Claim 11 wherein one end of the alignment probe is chamfered to engage the opening in the cartridge hub when the cartridge hub is off-center.

15. A method according to Claim 11 wherein the alignment probe is positioned in a spindle in the tape drive.

16. A device for aligning a hub comprising:
a spindle, wherein the spindle is operable to rotate the hub; and
a spring-loaded alignment probe mounted in the spindle, wherein the alignment probe engages an opening in the hub.

17. A device according to Claim 16 further comprising:
a tape drive, wherein the spindle is mounted in the tape drive.

18. A device according to Claim 17 further comprising:
at least one cartridge, wherein the cartridge includes the hub in the center of a spool, and the cartridge is utilized with the diameter of the hub oriented at least partially vertically.

19. A device according to Claim 18 further comprising:
an access device, wherein the access device is automatically controllable to insert the cartridge in the tape drive.

20. A device according to Claim 19 wherein the tip of the probe extends through the opening in the hub, and the probe depresses at least partially into the spindle when the hub does not include the opening.

21. An apparatus comprising:
means for mounting an alignment probe so that the alignment probe engages an opening in a cartridge; and
means for spring-loading the probe.

22. An apparatus according to Claim 21 further comprising:
a tape drive, wherein the tape drive includes the means for mounting the alignment probe.

23.. An apparatus according to Claim 21 further comprising:
at least one cartridge, wherein the cartridge includes a hub; and
an access device, wherein the access device is automatically controllable to insert
the cartridge in the tape drive.

24. An apparatus according to Claim 21 wherein the tip of the probe extends
through the opening in the cartridge, and the probe depresses at least partially into the
means for mounting the alignment probe when the hub does not include the opening.